THE UNIVERSITY of EDINBURGH

Thesis scanned from best copy available: may contain faint or blurred text, and / or cropped or missing pages.

"INTERRUPTED GESTATION "

A Thesis for the Degree of M. D. Presented by

Osmund Harry Chapman.

-:-:-:-:-:-:-:-:-:-:-

Degrees of M. B. C. M. obtained 1894

Thesis for M. D. presented.....1905

-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-

"INTERRUPTED GESTATION"

DEFINITION:-- " Interrupted gestation" occurs when the contents of an impregnated uterus escape before the full term of Gestation is completed. The returns of the Registrar General show that for some years past there has been a steady decline in the birth-rate of Great Britain; and since it is recognised by the leading authorities that a country's greatness depends upon a high-birth rate, any cause which acts upon the birth-rate in a deleterious manner is worthy of very serious consideration, therefore the study of "Interrupted Gestation" is of the utmost importance.

PROGNOSIS

If the normal period of Gestation be shortened in any degree, the vitality of the offspring is lessened, in proportion to the shortening of the natural term. It is not usual to expect a living child before the sixth month of pregnancy, and the mortality of premature children is enormous. In the report of twenty-five cases of induced labour on account of contracted pelvis published by Winckel, it is stated that the mothers all recovered, but fourteen of the children were stillborn; of the thirteen born alive, only seven survived after a fortnight. In the future this high mortality rate may be reduced

somewhat by the use of properly constructed incubators. There is great danger to the mother from Haemorrhage and Septicaemia.

RATION OF EGNANCY. The present normal duration of pregnancy has probably been arrived at by a process of natural selection, the offspring of those mothers who were not delivered before the end of ten lunar months surviving better than those of a shorter period of gestation; until now the mature period of gestation in the human female is commonly stated to be nine calendar months, or ten menstrual or lunar months. Whitehead, in his book on "Abortion and Sterility" published in 1847 says:-" The period of Utero-Gestation in the human female comprehends the first nine months of animal existence, reckoning from the moment of impregnation, when the ovum--- hitherto limited in its operations within a very narrow sphere receives the fertilising stimulus, to the completion of its intra-uterine growth". This statement, though in the main correct, is open to criticism, for he does not state whether calander or lunar months are meant; also the moment of impregnation has never been satisfactorily recorded; and this will never be definitely settled until ~~the localising of~~ the site, in the genital canal, where the ovum becomes fertilized, is localized a question which is most probably beyond definite settlement.

More recent Obstetricians prefer to give an average number of days as the period of gestation. The number of days is variously stated by different authorities, the lowest number given is 272.2days which average was arrived at by Lowenhardt after observing 518 cases of pregnancy, the reckoning being made from the date of a single coitus. Norris, in the American Text-book ofObstetrics states that the duration of pregnancy is between two hundred and seventy and two hundred and eighty days, from the first day of the last occurring menstrual period, or about two hundred and seventy five days calculated from its cessation. Matthews Duncan claims to have made many successful predictions of the date of delivery; he observed that the average time between the cessation of menstruation and parturition was 278 days.

In all calculations of the duration of pregnancy in woman there is always the possibility of an error of 25 days, this figure representing the interval between the end of one menstruation and the commencement of another, and conception may occur either immediately after a period, or just prior to the proper epoch for the occurrence of the next.

A source of fallacy which is often overlooked is the fact, that even a single coitus does not fix the date of conception, but only that of inseminat-

It is well known that in many of the lower animals the fertilization of the ovule does not take place until several days after copulation, the spermatozoa remaining in the interval in a state of active vitality within the genital tract. Marion Sims has demonstrated the possibility of spermatozoa existing in the cervical canal in the human female some days after intercourse.

It is possible that the period of gestation may vary in duration in a similar manner as the menstrual cycle varies in different women, and that there are normal "Short" and normal "long" pregnancies. Occasionally the pregnancy is of much longer duration, several such pregnancies have been recorded, and probably the best established cases are those of Sir J.Y. Simpson in which the duration of pregnancy was 313 days, and one recorded by Prof. A.R.Simpson, in which labour did not occur until the end of 308 days. The following history was ~~presented~~ furnished by a patient and presents many interesting features:-

"First pregnancy".... Last day of last period 21st of March 1901. Labour appeared to commence 21st of November 1901. The symptons passed off also from that date no further movements of the foetus were felt, the medical attendant pronounced the child dead. Labour set in again on the 27th Jany 1902 at 1 a.m. Forceps were applied unsuccessfully

at 10 a.m. After numerous attempts delivery accomplished at 4 p.m., followed by profuse haemorrhage. The child was a girl and was not discoloured in any way and was of large size.

Second Pregnancy:-- Miscarried at about five weeks. Uterus curetted in April 1903.

Third pregnancy:- Last period Febry 20th 1904 Pains commenced Dec 16th 1904. Attendant thought labour had commenced but all signs passed off at end of the day. No further discomfort until Decr 23rd when labour commenced at 9 a.m. and delivery with forceps accomplished with great difficulty at 4 p.m. It is thus seen that the first pregnancy continued for about 310 days, and the third for about 304 days. These facts were furnished by the husband of the patient, a dentist by profession and a man of education and some medical training.

SIFICATION

Interrupted Gestations are divided into different groups according to whether the child is viable or non-viable. If the gestation be terminated before the end of the sixth month the child is regarded as being non-viable and to such a case the term Abortion or Miscarriage is applied. When a labour occurs after the sixth and before the end of the ninth month it is described as Premature. Sometimes it is sought to make a further sub-division applying the term"Abortion" to those cases of

Interupted Gestation which occur during thefirst three months, and "Miscarriage" to those which occur in the next three months. More recent authorities regard"Abortion" and "Miscarriage" as synonymous terms. Among the laity an Abortion is frequently called a"mishap", and occasionally one hears the term "slip" used in similar instances. The law makes no differentiation, but "Abortion" is made to apply to the expulsion of the foetus at any period of pregnancy before the time of gestation is complete. There are few multiparae who survive to the climacteric in wedlock but have had at least one immature pregnancy. The statistics are almost in some measure inevitably incorrect, because many of the very early Abortions escape observation. A woman sometimes exceeds her normal intermenstrual period by one or two weeks, or perhaps even only a few days, then the menses appear in increased amount; it is thought that the excess is due to the delay in their appearance, and what is really a very early abortion passes unnoticed. The delay in commencing to menstruate is incorrectly assigned to some other cause, such as cold for example. Very exhaustive enquiries were made by Whitehead as to the frequency of "Interrupted Gestation" and he concluded that rather more than thirty seven out of every hundred mothers experience abortion before they attain the age of thirty years and that among those who survive to the climacteric in wedlock nearly 87% have had at least one interrupted pregnancy.

Playfair states that there are few multiparae who have not aborted at one time or other of their lives Hegen estimates that about one abortion occurs to every eight or ten deliveries at term.

Tyler Smith expresses the opinion that there is a greater tendency to abortion during the first pregnancy This statement is contrary to the views of the majority of observers, and it is just possible that he was led to this conclusion by the greater constitutional disturbance produced when the first pregnancy is prematurely interrupted. Many multiparae abort during the first three months without calling in the aid of an obstetrician, but the majority of women in whom the first pregnancy is immature come under skilled observation.

Shroeder in his " Manual of Midwifery" states that there are twenty-three abortions among multiparae to three among primiparae. Whitehead believes that abortion is more apt to occur after the third and fourth pregnancies, and this is more noticable when they take place towards the time forthe cessation of menstruation. Pregnancy is more frequently interrupted before the end of the fourth month and it is possible that this is due to the greater vascularity of the decidua, which predisposes to haemorrhage; and also because the ovum is less secure in its attachment to the internal surface of the uterus before the placenta is fully developed.

Up to the end of the third month the ovum is usually cast off en masse. After the third month when the differentation of the placenta is completed the Amnion ruptures, the Liqu or Amnii escapes, the foetus is expelled, and the placenta with the membranes follow. From the third to the sixth month the placental and uterine relationships are more intimate than at any other period of pregnancy and from this cause portions of the secundines of an interrupted pregnancy are liable to be retained and undergo putrefactive changes resulting in the setting up of Septic ae mia. There is also a great risk of excessive haemorrhage at this period of Gestation. After the sixth month the course of an interrupted pregnancy follows very closely a labour at full term. It has been repeatedly observed that one abortion may lead to others, until what is known as a "Habit of Abortion" is established. There may be an irritability of the uterus set up so that it refuses to undergo the necessary physiological modifications required to contain the developing embryonic structures which act as a foreign body and are repeatedly prematurely expelled. This "Habit of Abortion" is very liable to be developed in women with a Syphilitic taint.

MORTALITY. Interrupted pregnancies occurring naturally are rarely fatal to the mother, but are very frequently the starting point for many various Uterine diseases, especially is this so when the treatment

has been inefficient. When a fatal result does ensue, it is highly probable that it is a case of criminal Abortion, produced either by mechanical means or by the use of various drugs which have acquired a reputation as Abortifacients.

The Infantile Mortality rate is very high and varies with the period of gestation, at which the pregnancy is terminated. As a genral rule a foetus born before the end of the sixth month seldom survives birth; but Dr.Keiller of Edinburgh has put on record a case of a foetus being born alive at the fourth month, nine days after the mother had experienced what is known as quickening. Some six months children have survived birth and been reared successfully.

CAUSES OF INTERRUPTED GESTATION.

During every pregnancy, normal and otherwise, there is always a tendency, more or less marked for an interruption to the natural processes of gestation to occur at what would have been a menstrual epoch if there had been no pregnancy existing, and, at such times it is occasionally possible for a very trivial circumstance to terminate what appeared to be a normal pregnancy. The normal course of Gestation may be interrupted by causes arising from either one or both parents or from defects in the developing embryonic structures. In addition to these causes, which may be designated as natural, there are those which may be termed criminal and also the Medico-legal which are used to secure the production of

premature Labour where the health of the mother is such as to demand interference with the progress of gestation.

The Parental causes may be either Paternal or Maternal.

The Paternal causes of Interrupted Gestation are not so numerous or so important as the Maternal, because the relationship of the mother is so very intimate during the period of Gestation. Those diseases which affect the general constitution of the father are apt to lead to the production of immature pregnancies. Syphilis is the disease which is the most frequent source of an interrupted gestation, and very often the affection is paternal in origin. Old age of the father is given as a cause for Interrupted Gestation; and it is a well established rule among breeders of animals to avoid "age" in any sire. There are many instances of men becoming parents when faradvanced in years. An example of this came under observation in the case of an old man aged seventy three years, married many years to his first wife, who was childless; after her death he married a young woman aged twenty eight years, who bore him a fine healthy daughter.

Maternal Causes of Interrupted Gestation. Owing to the close association of the mother and child during the period of intra-uterine life, every departure, however trivial, from normal health on the part of the mother produces an influence more

or less baneful on the health of the foetus.

Maternal and Foetal Causes. Maternal and Foetal causes are so closely related to each other that it is almost impossible to group them separately, yet an attempt to do this is always made and the general rule will be followed.

(1) Poisons in the Blood. Poisons in the blood are produced by many various diseases.

(a) Syphilis is regarded by all competent authorities as one of the most potent and frequent causes of Interrupted Gestation. Within the compass of this paper it is not possible to fully discuss the many and varied problems presented by this subject. It will suffice to give two examples of cases met with in relation to this disease. One patient had five ~~premature~~ immature pregnancies, the duration of each succeeding one gradually increasing until the sixth, when the full term of pregnancy was reached and an apparently healthy child was born. This patient could not be induced to submit to an efficient course of anti-syphilitic treatment; the infection seemed rather to gradually die out.

During the first puerperium of another patient the husband contracted syphilis, for which he was treated. In the course of time the second pregnancy was prematurely terminated at the end of the sixth month. The child presented all the characteristics of hereditary syphilis and survived its birth three hours.

A definite course of Antisyphilitic treatment was followed by both husband and wife, and in due time a healthy full time child was born.

B- ZYMOTIC FEVERS.

All the diseases included under the head of Zymotic Fevers have a prejudicial effect on the course of pregnancy. Three cases of interrupted gestation produced by Typhoid Fever came under observation and the following is a brief resume of the histories of these cases:-

The first case occurred in a primipara twenty years of age, who was prematurely delivered of a female child at about the end of the sixth month. The birth was uneventful and for a first case very easy indeed. The temperature was not taken on the first day as no unusual symptom presented itself. On the second day there was some diarrohea; and the temperature was found to be 103.5 Fah. with a pulse rate of 100. The Lochia were normal in quantity and colour, and free from any odour. As there had been two cases of Typhoid Fever in the same house some months previously, it was concluded that these symptoms were due to a mild attack of typhoid fever, and the subsequent history proved this surmise to be correct. The discharges remained perfectly sweet & clean; while the temperature chart presented the usual characters of a case of Typhoid Fever. Convalescence was well established by the end of six weeks.

The child in this case did not survive the first week. The second case was in a Primipara eighteen years of age. There had been three cases of typhoid in the house some two months previously. The labour came on towards the end of the seventh month. There was a slight rise in the temperature on the evening of the first day and during the week following, this rise, continued until the ninth day when it reached 103.8 F. the pulse rate during this time averaging 100 per minute; then a gradual decline set in, the normal temperature being reached at the end of the third week from delivery. The Lochia at all times were quite natural in every way. There was no diarrohea; the bowels being kept open by simple enema when required. The child died at the end of ten weeks from Acute Zymotic Diarrhoea. In both these cases there had been no complaint of any illness before the date of delivery, except a slight general malaise such as is frequently met with in pregnancy.

The third case presented different features from the two preceeding cases. The patient was a multipara and during the earlier months of pregnancy had been under treatment for some slight Vaginal discharge and irritation which yielded to mild antiseptic baths and douches. When eight months pregnant the patient was suddenly seized with an intense pain just below the angle of the right scapula. On examination

the temperature was 104 F., Pulse 120. She complained of feeling ill and appeared somewhat anxious. There was slight pain in the limbs and at the point just indicated there was a sharp agonising pain, which caused the breathing to be short and hurried. Up to being seized with this pain the general health had been fairly good, since the vaginal trouble had yielded to treatment. There were no uterine contractions and it was hoped that the acute symptoms would subside under treatment so that the full term of pregnancy might be reached. Hot linseed meal poultices sprinkled with Tr.Opii were applied frequently to the painful area,and a mixture containing Pot.Bicarb and Tr.Cinch-Co was given. About two hours after first seeing the patient, a message was received stating that pains had come on and the nurse thought delivery would soon take place. On reaching the patient's house it was found that the child was just born. When pulsations had ceased the cord was tied and divided. The placenta followed in the course of ten minutes- the haemorrhage was somewhat profuse, but was quickly controlled. On examining the child there was found to be a profuse haemorrhage from the bowel. This unfortunately did not

yield to treatment and the child died within five hours. Shortly after delivery the patient's temperature dropped to 99.5 F. and the pulse was 85 per minute. The violent pain in the right side had almost disappeared. On the following day the temperature had risen to 102.5F. where it remained for about a week and then gradually subsided reaching the normal level about 16 days after delivery. There was no diarrhoea or vomiting. The Lochia were rather profuse but remained free from any offensive odour. The presence of rose coloured spots, such as are commonly seen in Typhoid Fever, was not positively ascertained in any of these cases. The diagnosis of Typhoid Fever in these three cases was based upon-

A. The presence of temperature which presented the characters of a typical Typhoid Temperature Chart.

B. The distinct probability of Typhoid infection in two of the cases, although disinfection had been carried out by the Sanitary Authority some time previously.

C. The absence of any marked tenderness of the Uterus.

D. The absence of foetid discharge; the Lochia remaining normal in each case.

E. Typhoid Fever of a mild type was practically endemic in that locality. The subsequent history in each case proved the diagnosis to be correct.

C. JAUNDICE is occasionally a cause of abortion, more especially the grave form which is associated with acute Yellow Atrophy of the Liver. The simple Jaundice occurring in the early months of pregnancy rarely causes premature termination of the pregnancy. One case of simple jaundice came under observation in which the symptons yielded to treatment in about fourteen days and the pregnancy terminated naturally at term.

D. Albuminuria. Albuminuria is an occasional cause of interrupted pregnancy. It is stated to occur in from three to five per cent of pregnancies. Blot and Litzman found albumin in the urine of twenty per cent of pregnant women, which is much higher than the estimate of many other authors; Fordyce Baker thinks that it occurs in about four per cent of cases, and Meyer found it in five and a half per cent out of one thousand one hundred and twenty four cases: but these figures may not be accurate as vaginal discharge may be mixed with the urine before examination, therefore albumin in small quantities at least should not be said to be present unless the urine is drawn off by means of a catheter.

It is met more frequently in primipara than in pluripara. If Albuminuria occur during a first pregnancy, it is very apt to recur during subsequent pregnancies, all of which may terminate prematurely. A case illustrating this condition came under observation, of which the following is a brief history. During

the course of the first pregnancy Albumin made its appearance in the urine, gradually increasing in amount until at the end of the sixth month a dead child was born. The general health of the patient then improved and she again became pregnant. About the sixth month she came into my care, when the urine was found to contain albumin in some considerable amount. A mixture containing Citrate of Potash in ten grain doses was given and strict attention was paid to diet, bathing, clothing, and exercise. The pregnancy was carried to full time, but, unfortunately the child only lived for a few hours. In this case there was some swelling of the feet and ankles and the face was somewhat puffy. Under the treatment adopted the general condition improved, the puffiness became less and the Albumen diminished, but was present until after the confinement.

This condition has a marked tendency to occur in multiple pregnancies and Litzman thinks that in doubtful cases he can decide against a twin gestation if no albumin be present. In one case of twin pregnancy, at the end of the sixth month general dropsy developed, there was a marked decrease in the amount of urine, which contained a large quantity of Albumin. No casts were found in the deposit. Labour came on at the end of the seventh month, one child was born alive and still survives eighteen months after, although at birth it only weighed three

and a half pounds. Two days before delivery the secretion of urine almost ceased, only a few ounces being passed in the twenty four hours. On boiling a specimen of the urine the contents of the test-tube became almost solid. When parenchymatous nephritis develops during pregnancy abortion is likely to occur.

Three theories of the origin of Albuminuria are given by Rentoul:- 1st., that it is due to a blood crasis, 2nd. to mechanical pressure of the Uterus on the abdominal veins, and 3rd. to the additional tax thrown upon the kidneys during pregnancy.

Albuminuria may produce abortion by favouring the extravasation of blood, owing to the haemorrhagic tendency induced; by producing a condition favourable to the retention of waste products, resulting from the oxygenation of the maternal and foetal tissues, these ratained products posioning the embryo and thirdly by furnishing this poison which may act on the uterine muscle.

The foetal mortality in this condition is very high. Parvin places the mortality figure at fifty per cent and Braun sets it as high as eighty per cent. The disease may subside, but there is a grave danger from Eclampsia, the mortality of which is 30 per cent.

E. An excess of Carbonic Acid in Cardiac and Lung affections may so operate as to cause pregnancy to terminate prematurely.

F.. Impoverished State of the Blood There are several conditions which may cause the maternal blood to become so poor that the developement of the Embryo is unable to continue; this has been noticed to occur in times of Famine. Prolonged suckling may so weaken the system that conception is prevented or should pregnancy occur early abortion may be expected. It is a well knwon fact that many women unduly prolong the nursing period so that pregnancy may be avoided. During the early months of pregnancy vomiting- especially in the early morning is so common as to be almost regarded as natural. Excessive vomiting may induce abortion by producing extreme weakness, or perhaps act in a mechanical manner, the straining during the act of vomiting exciting the uterus to contract and expel its contents. In extreme cases it is occasionally necessary to terminate the gestation artifically. A ten per cent solution of Menthol in Olive oil has been found most efficacious in treating this condition. An average dose is ten drops when nausea is present, repeated when necessary; on rare occasions thirty drops have been required before the full benefit was obtained.

G... HIGH TEMPERATURES.

A temperature of 105 deg.F. is regarded by many authorities to be fatal to the foetus. Anna E Blount in the Woman's Medical Journal,Toledo U.S.A. reports

a case of high temperature preceeding a premature delivery and in a recent issue of the British Medical Journal there was a brief report of two cases in which the temperature was 104 F. for a short time before miscarriage, but returned to normal shortly after the delivery was completed. There were no symptoms indicating any particular disease such as Acute Rheumatism or Pneumonia, which could have given rise to the Pyrexia.

IV The Meternal Nervous System may be so disturbed by Fright, Worry, Excitement or Shock that labour comes on prematurely. A Primipara saw a man at her door distributing handbills, who had an objectionable appearance from the loss of his nose. She felt very frightened and much upset. From that moment no more foetal movements were felt and within a week a dead child was born about two weeks before term. Subsequent pregnancies in this patient were normal, the children being quite healthy and free from all suspicion of syphilis. The husband of another patient failed to meet a payment and goods were seized by a bailiff in lieu thereof. This so upset the patient that she aborted being three months pregnant.

V.MORBID STATES OF THE UTERUS. Endometritis, Mesometritis, Perimetritis, whether present singly or in combination will on occasion be productive of an immature pregnancy. Probably Endometritis is a most frequent cause of Abortion. It may be the result of a previous Abortion, which was not effectually treated, and what is known as "the Habit of Abortion" results.

Uterine fibroids especially the submucous variety, are a potent factor in the production of early abortion, and in many cases conception is altogether prevented. It occasionally happens that a patient who has borne several children has an early abortion, and from this date symptoms of Uterine Fibroid are developed. A patient bore five healthy children and aborted at the end of the third month of the sixth pregnancy, after which there were repeated and prolonged haemorrhages recurring at intervals of from two to four weeks and a Fibroid was found to be the cause.

Carcinoma usually prevents conception, but should pregnancy occur abortion may easily follow.

The various displacements of the Uterus frequently ensure the premature termination of pregnancy. A condition of Retroflexion or Retroversion may lead to very serious complications ending in death of the foetus and grave injury to the maternal health if reposition is not attained.

VI An irritable condition of the Bladder or Rectum may be productive of Abortion.

VII Direct Violence.

Injuries to the abdomen during the course of pregnancy may produce abortion, but many major operations have been performed without any accident happening. Operations for the removal of the ovaries have been frequently performed during pregnancy without abortion following.

Fehling in Monatsschrift für Geburtshufle und Gyrakologie

1900, reports two hundred and sixty-six abdominal sections for Ovarian tumours complicating pregnancy with five and a half per cent mortality. This is about the mortality rate of Ovariotomy under all circumstances Thirty-three per cent of the children were lost through abortion or premature labour. Before the fourth month of pregnancy single or double ovariotomy is attended with very low mortality and very little risk of disturbing the pregnancy. After the fourth month the risk is that of an ordinary ovariotomy, but the chances of abortion increase with each month. In the American Journal of Obstetrics for August 1897, Byford relates a case of a severe operation for removal of a dermoid cyst in a patient four months pregnant. The operation was complicated by adhesion and lasted two hours. Some uterine contractions occurred but were controlled by morphine and the pregnancy was carried to full term. Mainzer Muchener Medicinische Wochenschrift 1895 reports a double ovariotomy in a primipara four months pregnant from which the patient recovered and went to full term. Some women have sought to prematurely terminate pregnancy by engaging in violent exercises, such as riding, dancing and jumping, in later years the bic ycle has been used in a similar way. A railway journey or drive over rough country has been followed by a miscarriage.

Under this heading of Direct Violence Coitus should be mentioned, for it is probably a most potent factor

in the production of Interrupted Gestation.

Excessive Sexual Intercourse may induce chronic congestion of the Uterus resulting in early abortion. This is probably the cause of the sterility of prostitutes, who frequently abort early, but when they marry often bear full time children. Depaul consideres sexual intercourse to be the cause of two-thirds of spontaneous abortion, while Miguel states that nine out of every ten are produced by it. Excessive coitus may so weaken the male element that a very feeble embryo is propogated which is only able to survive the first few months of pregnancy. That coitus during pregnancy may be the cause of interrupted pregnancy is well illustrated by the following case:- The wife of a captain of a steam fishing vessel was delivered at the end of the sixth month of a male child, which survived its birth for a few months only. A year afterwards there was a repetition of these events, but the uterine contents were expelled en masse, there was no rupture of the membranes, the placenta came at the same time. The foetus could be seen moving about within the membranes. The membranes were punctured and the foetus liberated, but the pregnancy had only proceeded to the endof the fifth month so life was not long sustained. Three months after this the patient again became pregnant and at the end of the fourth month of pregnancy she was taken with severe pains and some haemorrhage. Shew was at once put to bed and given the following mixture:-

Fuild Extract of Viburnum Prunifolium, Tr.Opii, aa m x

Aq.Camph 1oz.Sig. Every four hours. The haemorrhage and pains ceased under this treatment and being very anxious for a living child the patient consented to rest in bed and be regarded more or less as an invalid for the remainder of the pregnancy and to have a nurse in constant attendance. A diet composed of fruit, vegetables bread and milk was given. Meat of all kinds was excluded from the diet. A teaspoonsful of Aleteris Cordial was given three times a day. After six weeks rest the patient was allowed out of bed for a short time daily. At term a healthy male child was born the labour and puerperium were normal in every respect. The next pregnancy occurred when this child was eight months old.The pregnancy terminated about two weeks off term, when another male child was born. About twelve months after the birth of the last child the patient was prematurely delivered of a female child which appeared to be about seven months ; but the actual period of gestation could not be accurately ascertained as menstruation had not appeared since the last confinement. It was most difficult to find a cause for these repeated premature labours. The general health of both parents was very good. There was no albuminuria nor any other disease likely to be the cause. At no time was there any trace of Syphilis ineither parents or children That the father should always have been at home on these occasions appeared to be more than a coincidence and on making careful enquiries it was ascertained

that there had been sexual intercourse shortly before the commencement of the symptons in each of the premature labours.

Foetal Causes of Interrupted Gestation. Death of the Ovum can scarcely be said to occur apart from a Parental cause.

A. ABNORMALITY OF DEVELOPMENT. There may be some abnormality of developement which limits the foetal existence to a very brief span. It is not usual for a monstre to be carried to full term. The following brief histories of a few cases may serve as illustrations:-

A midwife requested a consultation during the labour of a multipara who was pregnant for the fourteenth time. On making a vaginal examination, the Os was found to be widely dilated, the uterine contractions were strong, regular and frequent. There had been some amount of haemorrhage. Protruding through the Os was a body which at first felt like the cord but was found to have no pulsations, and to be associated with similar bodies, and it was found that they were coils of small intestine. On passing the hand further into the uterus a leg was found and gentle traction brought the buttocks through the Os. The other leg was grasped and the foetus was easily delivered. It proved to be a very interesting monster. There was a complete absence of the abdominal parieties. The left leg was articulated at the hip in such a manner that the great toe was pointing directly back-

wards. The pregnancy was supposed to be about the seventh month. Another multipara was attended in her fifth confinement, when hydrocephalic twins were born at the middle of the seventh month,- both were still born males. The heads were soft and filled with fluid, so that they looked like bags of water, they were easily moulded to the passages. The presentation in each case was by the Breech. Two cases of anencephalous foetus came under observation. Delivery occurred in one case at the end of eighth month of the second pregnancy; the foetus immediately after birth, gave a few feeble gasps and died without respiration being established. The other case occurred in a primipara, and the anencephalous monster was born at the end of the seventh month.

B. DRUGS. The effect of drugs on the foetus has not yet been fully investigated, but there is evidence that certain drugs when introduced into the maternal system may affect the foetus and experiments have been conducted to show that drugs introduced into the foetal circulation may produce symptoms in the mother. Bryer holds:-

1st. That easily diffusive substances in solution may pass from the maternal to the foetal blood.

2nd. That the oxygen is given off from the maternal haemoglobin to the foetal haemoglobin.

3rd. That Sodium Sulphate, Indigo and Potassic Iodide, may pass from the maternal blood to the Amniotic

fluid without passing through the foetal circulation.

4th. That diffusible substances may pass from the foetus to the mother.

5th. That oxygen may pass from the foetal haemoglobin to the maternal haemoglobin if the latter contains little or none.

6th. Certain substances in solution probably pass in small quantities from the Liquor Ammii into the maternal blood.

7th. That formed elements probably pass in the normal placenta, only when they are very small, more especially through the agency of Leucocytes, or by increased blood pressure.

Chloroform given to women in labour has been traced in the blood of the foetus and in the placenta by Zweifel. Morphine, when given during labour, has been thought to have affected the foetus- but the symptoms may have been due to Asphyxia. If Opium and its products affected the foetus in Utero as easily as they do the nursing infant Abortion would be far commoner than it is at present. A pregnant woman may take opium freely without injury to the foetus, but if a nursing mother takes anything like a full dose of opium the child will in every probability die.

Pollak has shown that when fifteen grains of quinine were given to a woman in labour, the urine of the child born one and a half hours afterwards, showed the presence of quinine.

Granville says that in his experiments with six pregnant women, these took nightly and for seven days fifteen grains of Rhubarb powder. At labour some of the Liquor amnii was kept. A little of the foetal blood was also drawn off before the cord was tied. Some of the urine was also saved. Each of the secretions appeared tinged with the yellow root, and bore the smell of it.

If potent drugs could pass through the placenta as easily as these obstructions would lead one to expect, abortion would be far commoner than it is. The majority of drugs taken to interrupt pregnancy only injure the maternal tissues and when the damage reaches a certain point Abortion occurs.

C. Effects of Bacteria on the Foetus.

The placenta is regarded as a species of filter by many authorities, and the passage of Bacteria through it is regarded as highly improbable. Kock says that in rare cases the Bacillus Tuberculosus infects the foetus in Utero. Lizzoni and Cetani of Bolonga have lately published the records of a careful examination of a foetus of five months, which was expelled by a woman suffering from Cholera. It was born on the third day of her illness. No definite Comma Bacilli

were found in the blood, but by means of plate cultivators, colonies of Koch's Comma Bacilli were grown. The authors conclude that the disease can be transmitted from the mother to the foetus by the blood. Further investigations will probably establish the possibility of the passage of Bacteria through the Placenta, and will also ascertain the conditions necessary for the transmission to take place.

9. Diseases of the Placenta:-

The placenta is partly Maternal and partly Foetal in structure, and is not fully formed until the fourth month of pregnancy.

There are many diseases affecting the Placenta which may cause pregnancy to terminate prematurely. There may be haemorrhages into its substance producing the so called Placental Appoplexy. There may be effusion and extravasation of blood on to the maternal or on to the foetal surface of the Placenta. Any one of these conditions may prove sufficient to interrupt the progress of pregnancy.

Sir. J. Y. Simpson has described the rare condition of Placental Phthisis. The placenta may be subject to various inflammatory processes giving use to a condition of Placentitis. There are various degenerative processes which may affect the placenta, of which the Fatty,

Calcareous & Cystic are the most important.

Fatty Degeneration:-- The causes of fatty Degeneration are not known. The condition was thought to follow the death of the foetus, but it is now known to precede it. The whole or part of the placenta may be affected & present a whitish appearance. Calcareous Degeneration of the Placenta is occasionally met with in apparently normal pregnancies, the labour occurring at full time without any unfavourable symptom ; and it is most probably of no great significance in the majority of cases in which it is observed.

Cystic Degeneration of the Placenta. In this condition the chorionic villi undergo degenerative processes and if it does not commence until the Placenta is fully formed the degeneration may be limited to a few small cysts in the substance of the placenta and there may be no interference with the course of the pregnancy. The developement of the Villi into cysts arrests the function of that portion of the placenta attacked. In some rare cases full time children have been born, when there has been a considerable number of cysts present.

The most important form of Cystic Degeneration occurs before the differentiation of the placenta has been completed. This conditon has been long recognised and is known by various names,

be called the orthodox opinion that the vescicles are degenerated villi. Further, in the stroma retrogressvie changes alone are to be seen, while the epithelial investment shows both proliferative and retrogressive phenomena. The hydatid mole is, what it is anatomically and clinically, by reason of the epithelial portion of it. The process begins in budding from the syncytium of the villi; and in later stages the syncytium and the cells of Langans layer constitute cellular masses, visible sometimes to the naked eye, which lie between the villi from which they take origin. These masses increase at the periphery and degenerate at the centre, where they form vacuoles. These changes led Sfameni to regard all the vesicles as formed in this manner, but such masses with vacuoles can be distinguished by their histological characters from villi with a true connective tissue core. For unknown reasons the epithelial proliferation may be arrested, or may reach only moderate dimensions. This fact, when observed to some extent enables the clinician to form a favourable prognosis regarding the sequelae of the mole.

Chorion-epithelioma and hydatid mole are so similar that they might be regarded as identical if it were not for the relative rarity with which a chorion epithelioma follows a molar pregnancy. The actual cause of the cystic degeneration

some of which are:- Vesicular, Cystic, Placental, Hydatid, Hydatiform, Hydatidiform, or Myxomatous, Mole; Uterine Hydatids; Myxomatous Degeneration of the Chorionic Villi; Herpigenous Degeneration of the Chorion; Dropsy of the Villi of the Chorion; Myxoma of the Placenta; and Molar Pregnancy.

The frequency of the Disease.

The disease is very rare, there being about one case in two or three thousand pregnancies. Some authorities think that it is much rarer. Madame Boirin reports but one case in twenty thousand pregnancies. In this disease the villi of the chorion are affected, and it usually occurs before the placenta is formed, when the villi of the chorion which are not associated with the formation of the placenta are still unatrophied, but are equally developed around the whole of the periphery of the ovum. The membranes forming the envelope of the ovum will be found to be studded with vesicles, attached by pedicles.

HISTOLOGY:- Luigi Fiarsi in the Annali di Obstet. e Girec xxvii p.57. Jany 1905 gives a description of the Histology of Hydatid Mole based upon the observation of nine cases. The histological investigation showed that the vescicles consist of two parts, 1. a stroma which in every way resembles connective tissues and, 2, an epithelial covering. The constituent parts of the villi are therefore present, and so he holds what may

has not been determined; authorities holding very differnt views as to its mode of production. Virchou thought that disease of the endometrium was the cause, especially where there is a frequent recurrence of the degenerative processes. Hecker has claimed that vesicular mole is the result of absence of the allantois; and Schroeder states that it is likely that the possible absence of blood vessels in the allantois might deprive the villi of their blood supply. Reguier de Graf (1678) held that each vesicle or little cyst was an unfecundated ovule. At one time it was thought that each vesicle was a living embryo and Pare[1] in his work on surgery records the classical case of the Countess Margaret, who was stated to have been delivered of three hund red and sixty-five ~~x~~ living children at one birth, of which one hundred and eighty two were males the same number females and the odd one was a hermaphrodite; and these were duly baptised by a bishop!! This disease is usually looked upon as a myxomatous degeneration of the chorionic villi. It is probably of foetal origin, but on the other hand it may be due to deficient vitality in one or both elements which go to form a fertilized ovum.

The process usually begins before the end of the first three months of pregnancy and the resulting mole is generally cast off by the end of the fifth

month. In twin pregnancies it occasionally happens that the chorionic villi of one degenerate, whilst the other twin is born at full time. The growth is extremely rapid and from the size of the uterus, pregnancy might be thought to be much further advanced than it really is. This conditoon was at one time thought to be due to the encysted stage of the Echinococcus, and in consequence the name " Hydatid Mole" was applied to it. The microscope has demonstrated the falsity of this opinion as neither Scolicies or Hooklets are to be found in the fluid within the cysts.

True Hydatids are rarely found, but Hewitt relates the case of an unmarried woman who was the subject of Hydatid disease of the Liver, which extended into the Peritoneum, thence into the Uterus, and at the time of death was about to burst through the Vagina.

Cystic Degeneration of the Chorionic Villi is important because, (1). the foetus is usually destroyed. 2. the uterine wall may become infiltrated and weakened, so that perforation may easily occur during the manipulation necessary for treatment. 3. a malignant process may follow, giving rise to "Deciduoma Maligna", which may rapidly prove fatal.

SYMPTOMS AND DIAGNOSIS. The signs of early pregnancy are usually present and there may be some watery discharge

tinged with blood. The uterus rapidly increases in size, and on examination has an unusual hardness or density, described by Leishman, who regards it as of great importance, "as a peculiar doughy boggy feeling". The contour of the uterine tumour may be irregular. The auscultatory signs of the presence of a foetus are wanting. There is no distinct fluctuation and ballottement is absent. The diagnosis can only be finally made when the cysts are discovered in the watery bloody discharge. The appearance of the cysts is quite characteristic and has been well described as " white currants in red currant jelly". The mass is usually expelled before the end of the fifth month, but in rare cases it may not be expelled for thirteen or fourteen months, and this circumstance may cause unwarranted suspicion as to the character of the woman.

PROGNOSIS:- As a rule there is no trace of a foetus to be found; and when the presence of this disease is discovered the possibility of there being a living foetus is highly remote. The prognosis for the mother is on the whole good, especially if the full importance of the condition be realized and suitable treatment adopted.

TREATMENT:- When the diagnosis has been satisfactorily completed the indications for

treatment are obvious, and may be briefly stated in the following sentence "Empty the Uterus". It may be necessary to dilate the Os, which is now usually done by some form of mechanical dilator. The cavity of the uterus must be carefully explored by the finger and every trace of the disease removed, great care being exercised in consequence of the increased friability of the Uterine wall. There is considerable risk from haemorrhage and sepsis, both of which must be carefully guarded against. When the uterus has been thoroughly emptied an antiseptic douche should be given. Iodine, sufficient to colour the water a pale brown, is recommended. Ergot in half dram doses, repeated as necessary, may be given, and as involution is usually tardy the administration should be continued for some time afterwards.

The following is a brief history of two cases which came under observation:-

1st. A multipara aged thirty two years, had her last period in October 1894 at which time her fourth child was eleven months old and was still being nursed. The menstruation had recommenced when this child was six months old, and continued regularly for five months. The patient then became pregnant and the child was weaned.

The abdomen was noticed to be increasing in size somewhat rapidly, and the patient was inclined to believe that she was more than four months pregnant. During the afternoon of February 7th, 1895 pains in the abdomen came on suddenly, accompanied by a profuse haemorrhage. A nurse was sent for who thought that a miscarriage was about to occur, so advised medical assistance to be summoned. On arrival the patient was found to be pale and anxious, complaining of frequent recurring pains accompanied by profuse haemorrhage. On abdominal examination the uterus was found to be almost level with the umbilicus; it was irregular in outline and had a peculiar doughy feel. On making a vaginal examination the os uteri was found to be sufficiently dilated to admit three fingers easily and through it there protruded a small, soft, irregular mass, which could be traced up into the uterine cavity. The examining fingers removed a few typical vesicles, which enabled the diagnosis to be completed. By careful manipulation the greater portion of the growth was delivered and the uterine cavity was then carefully explored, some remaining particles being removed. The Hydatid Mole almost filled a two pound jam jar and presented the typical appearance of "white currants in red currant jelly". The individual vesicles varied in size from that of a small pea to the size of a grape- the inter-

-mediate sizes being much more numerous. When the uterus was thoroughly emptied it was carefully washed out with a weak hot Carbolic Acid solution. The liquid extract of Ergot was given in half drachm doses every four hours for forty eight hours and then three times a day for a fortnight. Recovery was uninterrupted and uneventful.

Case II. In the early morning of March 26th,1898 a man brought an urgent message requesting me to see his daughter, who, he stated" was bleeding to death and passing lumps of white flesh by the bowel". The patient, a young girl sixteen years of age was in bed, complaining of great pain in her body, accompanied by great loss of blood. Her mother showed me a chamber article containing about a pint of blood-stained fluid in which several clear grape like bodies could be distinctly seen. It was thought by the mother that these bodies had been passed by the bowel. Menstruation had been absent for three months, which was thought to be due to Anaemia, she having had two or three irregular periods from that cause, since she first menstruated at the age of fourteen. The abdomen was swollen, and on palpation the Uterus could be distinctly felt to be somewhat enlarged. The breasts were enlarged, the areola increased and darkened, and a watery secretion

was easily expressed. On making a vaginal examination a small mass was found protruding through the Os uteri. This was carefully removed and the uterine cavity thoroughly explored, care being takenthat no growth was left behind. The whole growth presented the typical appearance of a Hydatid Mole. A hot, weak,corrosive Sublimate (1-5000) douche was given. Half drachm doses of Extract Ergotae Liq were given every four hours for the first three days, then Ferri et Ammon Cit. in five grain doses three times a day was given for the Anaemia which was rather severe. Recovery was not hindered by any unfavourable symptoms arising. Since the patient denied all possibility of pregnancy, it was very puzzling to account for the condition. However, after a careful examination she admitted having had connection with a youth about her own age during the previous Christmas week. These two cases seem to strengthen the theory that Hydatid Mole may be due to a deficiency in the elements which go to make a fertile ovum, for in the first case the prolonged suckling associated with menstruation might easily account for a weak ovule; and in the second case the extreme youth of both parties clearly points to immaturity of both the essential elements.

D. Hydramnios -- Is an excessive quantity of

Liquor Amnii. It is also known by the names of Hydrops. Amnii, Amnitus or Polyphydramnios. The existance of this disease is denied by some authorities, but it is conceivable that there may be such an excessive secretion of Liquor Amnii as to be prejudicial to the health of the foetus.

Unless the amount of Liquor Amnii exceeds two quarts Kidd of Dublin did not regard the case to be pathological. The amount of fluid present has been known to exceed fifty two pints. The cause of the condition is not definitely known. By some authorities it is stated to be due to an obstruction in the foetal circulation, arising from either kidney or heart disease; and it may be associated with inflammation of the Amnion. This condition occurs onee in about a hundred and fifty births. It is more common among multi-para than in primiparae, and shows a marked tendency to be associated with multiple pregnancies. When the condition is met with, it has to be distinguished from (1) a distended bladder, (2) ovarian tumour, (3) Ascitis. McLintock states that the maternal mortality is high and that there is a tendency to recurrence. The treatment of this condition will vary with the amount of Liquor Amnii present; when very large it may be advisable to tap the Amnion high up, and withdraw

a sufficient quantity. In two cases, which came under observation at term, both multiparae, the amount of Liquor Amnii was sufficient to prevent the head from engaging in the pelvic brim, although the Os in each case was widely dilated, a roller towel was passed round the abdomen, and while traction was made the membranes were ruptured. The labour in each case terminated speedily and easily.

E. WEAKNESS OF THE MEMBRANES.

The membranes may become unduly weak so that any slight exertion on the part of the mother may bring about their rupture and premature labour set in. There seems to be a greater tendency for this accident to happen about the seventh month of Pregnancy.

F. DISEASES OF THE UMBILICAL CORD which may cause Abortion.

Where there is syphilitic infection the blood vessels of the cord may be affected, and the obstruction to the foetal circulation sufficient to produce interruption of gestation. The normal cord is twisted spirally from left to right in nine out of ten cases; in rare cases the twisting may be alternately to the right and left. The reason for this twisting has not yet been sufficiently explained, most probably it is due to the same cause, which produces the

spiral growth in plants. Under certain conditions the torsion may become so extreme as to occlude the lumen of the blood-vessels, causing the death of the foetus. The average length of the cord is from eighteen to twenty four inches. The cord may be so short that during labour rupture of it may occur, causing a fatal haemorrhage to the child. Cases, in which the umbilical cord has been over seventy two inches long have been recorded. In these cases the cord is frequently coiled round some part of the foetus, usually round the neck. It is no uncommon thing to find one coil of cord round the neck of a child at birth, and once three complete turns were observed.

As a general rule there is no ill effect from this condition during pregnancy, but when labour sets in, there is great danger to the child from asphyxia. It is thought by some that the cord may be coiled round a limb and produce intra-uterine amputation.

Knots on the cord are occasionally seen and it is usual to speak of them as True and False. False knots are of little significance, since they are merely aggregations of Wharton's jelly at one particular portion of the cord. The true knots are more important for if they be drawn sufficiently tight the foetus will die. This accident does not often occur during pregnancy but during labour the tension

tension on the cord may be sufficient to place the life of the child in imminent danger. True knots were found by Heckel once in two hundred and sixty nine cases, and by Elsasser once in two hundred and two. There may be more than one knot present, as many as three have been found. A patient, who expected her confinement in the latter part of March 1903, was taken with strong pains during the first week of February and a dead child was born within the next twenty four hours. The child was discoloured of a dull red-brown hue. The placenta was darker than usual and had a sodden appearance. The cord was about thirty inches long, dark coloured, swollen to twice its normal size, and at the middle of its length there was a true knot which had been drawn quite tight & firm, forming a complete obstruction to the foetal circulation. The mother stated that during pregnancy she had been very well and since quickening the foetus had been very lively up to ten day previous to the labour, when she noticed an absence of foetal movement and at times she herself had felt very unwell. There was no evidence of any disease which could have caused the death of the foetus, other than the condition of the cord. It is presumable that the child slipped through a loop in the cord and thus brought about its own destruction. Twelve months

later the patient had a full time healthy child.

CRIMINAL ABORTION OR FOETICIDE.

The earliest historians record the frequency of abortion procured by the woman herself or produced by the aid of another. There were many individuals who were regular abortionists, and the records of our police courts show that the race has not yet died out. The early Christian Church had very stringent rules against this prevalant custom, and did much to teach the people that it was a sin to cause the death of the unborn babe. Acts of Parliament were passed in the reigns of George IV and William IV making it a felony to procure an abortion. These laws have been somewhat modified by a Victorian Act. The English law at present makes no distinction between Abortion, Miscarriage, or Premature Labour, but regards all deliveries before the full time as abortions. The intent to procure Abortion, whether the woman be pregnant or not, by the use of drug, instrument, or any other means is a felony punishable with penal servitude for life. The person supplying the means of procuring abortion may be imprisoned for three years. The consent of the woman operated upon is immaterial and does not condone the offence. When death follows a criminal abortion the law regards the abortionist as a wilful

murderer, and the death penalty may be exacted. If it can be shown that the drug or instrument was harmless the charge may be reduced to one of manslaughter. Criminal abortion is commonest about the second, third or fourth month, at the time when a woman begins to be certain of her condition. Orfila regarded the second month as the most common time for procuring abortion. Deveagie thinks that it is between the third and fourth month when the attempt is made. Tardieu investigated thirty-four cases: five occurred in the first two months, twenty-five from the third to the sixth month, and four in the seventh and eighth month. When premature labour is induced by a medical man, for any pathological condition of the mother, he is regarded as a criminal by the law, and might be tried as such, but if he had acted openly and was able to show just cause for his procedure, conviction would not follow. In all cases where it is deemed advisable to induce premature labour it is advisable to have a consultation with a second medical man and to secure the consent of the husband or guardian, in writing if possible. To fully discuss the question of "Induction of Premature Labour" is outside the province of this paper.

Means used to promote Criminal Abortion. These may be divided into three groups:-

1. The administration of Drugs by the mother.
2. Acts of general violence.
3. Mechanical means used directly to the uterus

Another method of grouping is into:-

1. Mechanical. 2 Medicinal.

The mechanical methods are usually regarded as being the more effective. In India it is the custom of the native abortionist to insert into the uterus small twigs about six or eight inches long smeared with assafoetida. A gum elastic Bougie or Catheter is now often used by a woman to procure her own abortion. Women have been known to ask medical men to pass the uterine sound so that the early pregnancy may be terminated. In some cases the uterine sound has been inadvertantly passed into a pregnant uterus and in rare cases pregnancy has continued.

Hair pins have been passed into the uterus, but not always with the desired effect. The recurring illness of a patient was most difficult to understand until it was learnt that she was in the habit of passing a bone crotchet hook to "bring on her periods".

Hot vaginal douches have been used with some slight success.

Violent exercises have been indulged in with the view of securing abortion. A woman volunteered the information that when six months pregnant she went for a long cycle ride, and when nearing home intentionally fell off, but nothing more than a slight haemorrhage occurred. All kinds of violent exercises have been indulged in to secure the termination of pregnancy.

II MEDICINAL MEANS. The drugs used to secure abortion are of two classes:-

1. Ecbolics(ἐκβολικόν) are medicines which operate directly to procure abortion.

2. Emmenagogues (ἐμμηνιαγωγός) are those substances which excite or promote the flow of the menses.

Ergot is perhaps the only drug which maintains its reputation as an Ecbolic. Numerous fatal cases following its use have been recorded. It is said not to act in the earlier months of pregnancy, but that its action is best developed during the later stages. The full effect of the drug is obtained when there is a tendency on the part of the uterus to contract, as at a menstrual epoch. Salts of Iron have been erroneously believed to have ecbolic properties. A favourite mixture with abortionists is one containing Perchloride of Iron and Decoction of Aloes. Taylor and Stevenson record a case in which large doses of the Tinct. Feni Perch. were given to a woman to

procure abortion, but with no other effect than to seriously injure the general health.

Pennyroyal(Metha Pulegium) given in the form of tea, acts both ways. Savin(Juniperus Sabina) is really an abortificient owing to its irritant properties and not to any specific action of the uterus.

Rue, Tansy, Yew Saffron, all have similar properties to Savin.

Powerful Purgatives such as Colocynth, Aloes, and Gamboge; Emetics, such as Tartar Emetic: General Initants as Arsenic, Cantharades and Hellbore, have been employed to excite the uterus to expel its contents.

A case is reported in Taylor's Medical Jurisprudence where four and a half ounces of metallic mercury were taken with the result that the mother suffered from tremors and paralysis but did not abort.

Nearly every drug known has been tried as an abortifacient at some time or other.

Within the last few years the use of lead as an Abortifacient has been greatly on the increase Diachylon or Emplastrum Plumbi is the form in which the lead has been used. It is cheap, the sale is unrestricted, and it is used for very many household purposes, so the purchaser obtains it easily, without raising any suspicion.

In the majority of cases the Diachylon is purchased in the mass, cut up into small pieces and rolled to form pills. Six cases were met with in which abortion was produced by the use of Diachlyon. No information could be gathered as to the dosage, for the pills were destroyed as soon as the desired effect had been produced, and patients were naturally extremely reticent.

Case.1. Mrs. H. aged twenty-five years, had been delivered of twins at her first confinement in August 1897. An urgent message was received on February 18th, 1898 stating that she was suffering from excessive vomiting and violent pains in the body. The patient was in bed and appeared to be very anxious, excited and highly nervous. She had been ill for two days with constant vomiting and frequent pains in her body, chiefly confined to the lower part. The vomiting had been gradually getting more severe, so that small quantities of Milk and Soda were ejected almost as soon as they were swallowed. The vomited matter consisted of small particles of curd, floating in a grsss green coloured fluid. The tongue was coated with a thick white fur and she complained of a very nasty taste in her mouth. The temperature was normal, respiration twenty, & pulse seventy-five, regular and of fair volume.

The examination of the chest was negative. The abdomen did not present anything abnormal on inspection. There was tenderness on gentle pressure over the epigastrium. The spasmodic pains in the abdomen were somewhat relieved by the presence of the palpating hand. The bowels had not been moved for two days. A tentative diagnosis of acute Gastric Catarrh was made and a mixture containing Bismuth and Morphia was ordered. Next morning the patient was no better, but seemed to be weaker because of the ever recurring abdominal pains and the constant vomiting. In the evening there was a slight improvement, and small quantities of soda and milk had been retained. On the following morning as the genral conditions had not improved and the symptoms seemed to point to some irritant poisoning rather than a "Simple Acute Gastritis", another careful examination was made and after extended enquiries it was ascertained that she had had a miscarriage of a two months foetus two days before sending for assistance. The patient then confessed to having taken some pills" to bring her periods on",which had been given to her by a friend, who said that she constantly used them herself & that they could do no harm. It was with great difficulty ascertained

that the pills had been made of Diachylon, but no information as to the number or size of the pills could be gained. When the true nature of the poisoning was learnt, the blue line along the margin of the gums was looked for and easily found. The bowels were relieved by a hot soap and water enema which was repeated as required. Sulphate of Magnesia and Potassium of Iodide were administered and the patients condition gradually improved.

This case was very interesting because it was the first met with and everything was done to conceal the true condition of the patient.

Case II Mrs J. aged 24 years, had been confined of her first baby ten months previously. Her general health had always been pretty good, except for a mammary abcess which developed after the birth of her child. While investigating the case the patient stated that she had been three months pregnant but had miscarried two days previously. She admitted taking Diachylon pills for some days to bring about the abortion, and asked if her present illness could be due to these pills.

There was no rise in the temperature. The pulse was 80, regular, but rather weak.

The tongue was covered with a thin white fur. A faint blue line was distinctly seen along the margin of the gums. The examination of the chest was negative. The abdomen was slightly extended and

there was no increase of tenderness on palpation. The bowels had not been moved for some days. The vomiting was very troublesome, the vomited matter consisting of particles of curdled milk floating in a green coloured fluid. The constipation was relieved by enemata of soap and water as required. The patient gradually improved under the administration of Sulphate of Magnesia and Potassium Iodide.

Case III. Mrs. G 35 years of age, had five children and up to the present time no miscarriages. She lived in the same street, a few doors from the previous patient. She was seen on the day after seeing case II and complained of great pain in her body, constipation, and weakness of her right hand. The patient was in bed and stated that ten days previously she had been prematurely confined of a three months foetus. She thought that her present illness was due to some pills, made up of Diachylon, which she had taken to produce the miscarriage. There had been slight vomiting for a few days, which quickly passed off and she was able to take food fairly well. The bowels were constipated, but had been relieved by the simple aperient which she had taken as required. The tongue was slightly coated with a thin white fur. Along the margin of the gums was a characteristic blue

line. The lips and conjunctivae were pale and anaemic in appearance. The face had a pale dirty yellow hue. The temperature was normal pulse 90, regular but weak. The breath sounds were normal and in the mitral area a faint systolic murmur was audible and could be traced outwards for about an inch. The abdomen was slightly distended, and there was no increased tenderness or pressure. The right hand was weaker than usual, extension being performed with a great effort--the typical "wrist drop", of lead palsy was not fully developed. The patient was kept in bed for some days, given a light plain diet and a mixture containing Potassium Iodide and Ferri et Ammon Cit. The anaemia and wrist weakness slowly disappeared.

Case IV. Mrs A. aged 30. Had three children the last seven months previously, which was not nursed. Menstruation recommenced three months after the confinement and was regular for two months. Two periods had been missed when the patient took Diachylon, which she had made up into pills and a miscarriage occurred about ten days before being seen. She complained of great pain in the body recurring at frequent intervals obstinate constipation, and occasional vomiting.

The temperature and respiration were normal. The pulse was seventy per minute, regular, and of good character. Examination of the chest was negative. There was no increase of tender ness in the abdomen on palpation. The tongue was covered with a white fur, and a nasty taste in the mouth was complained of. There was a faint blue line on the margin of the gums, which was interrupted at the spaces left by the removal of decayed teeth. The paroxysyms of pain in the abdomen were so great that a quarter of a grain of Morphia was given hypodermically & repeated on two subsequent occasions. The constipation was most obstinate and was only relieved by repeated enemata of hot soapy water. The patient quickly recovered under the administration of Potassium Iodide.

Case V. Mrs T. 28 years of age, had had two children, the last child four years previously. Two periods had been missed and morning sickness was very troublesome for which she sought relief. Two weeks after the consultation an urgent message was brought by her husband who stated that his wife was very ill, she had great pains in her body and constant vomiting. The patient was in bed complaining of great pain in her body, headache, constant vomiting, constipation and a taste like ink. She voluntarily

gave the information that she had had a miscarriage, which had been brought on by taking some pills given her by a friend. On inquiring it was found that these pills had been made of Diachylon, the exact size of which was not ascertained, as she had burnt those that had been left over. The patient was in great distress, was very anxious and somewhat excited. She was very weak as a result of the constant vomiting and frequent paroxysms of pain. Temperature and respiration were normal. The pulse rate was 75, regular, but weak and small. The tongue was coated with a thick white fur, along the free margin of the gums a slaty-blue line was very evident and about the middle line there was a large blotch of similar colour, which extended from the gum on to the lip. Examination of the chest was negative. The abdomen was slightly distended, on palpation the epigastrium was very tender, but pressure relieved the pain in the lower part of the body. The bowels were constipated. The vomited matter consisted of small particles of curdled milk, floating in a greenish coloured liquid. The vomiting was very persistent and was with great difficulty controlled. A hypodermic injection of morphia in a quarter grain dose was given to ease the pain. The treatment consisted in the administration of Potassium Iodide and Sulphate of Magnesia.

The general condition improved somewhat but recovery was very slow, and about six weeks after the onset of the first symptoms she had a serious relapse while on a visit in the country. The spasms of pain and persistent vomiting of greenish fluid returned almost as intensely as at the commencement. The blue line and blotch were visible at the end of three months.

Case VI ____ This case was very interesting because when first seen the miscarriage had not then occurred. The patient was a married woman aged 27 years, had one child eighteen months old, complained of pain in the lower part of the body, vomiting of greenish fluid in which floated particles of curd and a general feeling of weakness Two periods had been missed. The tongue was thinly coated with a white fur, and along the margin of the gums there was a faint blue line. Temperature and respiration were normal, The pulse rate was 75, regular, but weak and of low tension. A faint systolic murmur was audible in the mitral area. The examination of the lungs was negative. There was a little distension of the abdomen, but no tenderness on palpation. The spasmodic pains seemed to be relieved by gentle pressure. A slight haemorrhage occurred in the early morning of the third day, and in

the evening the uterine contents were expelled, & some fragments were removed by the finger. The patient would not admit having taken anything to induce abortion, but from the similarity of the symptoms it was supposed to be a case of plumbism, and as every other source of lead poisoning was able to be excluded, it is most probable that this was a case of abortion brought on by the use of Diachylon. This presumption was strengthened by the fact of her residing in the same neighbourhood as three of the other cases. Potassium Iodide and Sulphate of Magnesia were used at first, and Ferri et Ammoni Citratis was added to improve the anaemia which remained for some weeks.

SYMPTONS OF INTERRUPTED GESTATION.

There are two symptoms, (1) Haemorrhage and (2) Pain; which occurring in the course of pregnancy give rise to the apprehension that the course of pregnancy is about to terminate. These two cardinal symptoms may occur together, or only one may be present.

(1). Haemorrhage occurring during the course of pregnancy is a sign of separation between the maternal and foetal structures. The separation may be so slight that the haemorrhage continues for a very short time, recovery takes place &

the pregnancy reaches a normal conclusion. The haemorrhage is often expelled in clots. It may arise from any part of the ovum and may burrow in different directions-a- between the uterine wall and decidua;-b- between the decidua vera and reflexa;-c- between the decidua reflexa and foetal membranes. The haemorrhage may burst into and fill the amniotic cavity. What is known as an apoplectic ovum is formed, when there is bleeding between the decidua reflexa and foetal membranes, or when the amniotic cavity is filled with blood. The bleeding at all times had a tendency to cause the death of the foetus, by reason of the severing of its connection with the maternal structures; or by pressure. The distension of the uterus by a blood clot may excite it to contract and expel its contents. Haemorrhage is usually the earliest symptom of abortion. There is great risk of haemorrhage and separation when the placenta is situated low down in the uterus, as in the condition known as Placenta Praevia which may be, (a) Central or complete when the os is completely covered by the placenta, (b) Partial or lateral when the os is approached or partly covered by the placenta, and (c) Marginal when only the margin of the placenta extends into the lower uterine segment. Pregnancy usually terminates before the end of the eighth month when there is Placenta Praevia. There may

be a continuous haemorrhage, not necessarily excessive in amount, but producing such danger to the mother as to render artifical interruption of pregnancy imperative.

II. Pain is due to contraction of the Uterus, is always intermittent and varies very much in intensity. The uterine contractions occurring at regular intervals and increasing in intensity render an abortion certain. They further increase the separation of the ovum,and produce the dilatation of the cervix.

DIAGNOSIS OF ABORTION.

(1). It is necessary to ascertain the presence of pregnancy, as there may be a uterine haemorrhage accompanied by the discharge of large coagula, which may be mistaken for an abortion. The presence of pregnancy is ascertained by noting -1- a history of amenorrhoea -2- morning sickness -3- the enlargement of the breasts,-4-expression of a glairy fluid from the breasts,-5- darkening and increase of the areola surrounding the nipple, -6- special reliance being placed upon the enlargement and softness of the uterus felt on making a bimanual examination.

(2) Haemorrhage and pains are present either independently or associated.

(3) The os internum may be felt to be dilated

VARIETIES OF ABORTION.

It is customary to speak of four varieties of abortion. 1. Threatened or Evitable. 2. Inevitable 3. Imperfect. 4 Missed.

1. A Threatened or Evitable abortion is said to be present when the signs and symptoms are only slight, and there is reasonable hope that the death of the ovum and its expulsion may be averted.

2. An Inevitable abortion is said to be present where the signs and symptoms are so severe that death and expulsion of the ovum is assured. Thus, severe haemorrhage or escape of Liquor Amnii, & dilatation of the os internum are indications of this variety.

3. An Imperfect abortion is the retention in utero of some portion of the ovum after an abortion has apparently been completed.

The diagnosis of imperfect abortion is of great importance, for the remnants of an abortion which is not completed, may undergo putrefactive changes and Septicaemia result, ending possibly in death of the patient. If the pains and haemorrhage continue for more than twenty four hours the uterus remaining enlarged and soft and the os internum still dilated, it is pretty safe

to conclude that the abortion has been imperfect. It sometimes happens that a patient is not seen until some days after an abortion is said to have occured; she is found to be suffering from a foetid discharge, tenderness in the body, & high temperature. Examination of the uterus shows it to be enlarged, soft and tender, and the os admits the finger quite easily. These symptoms are due to some portion of the placenta or shreds of membranes being left in the uterus. A case presenting these features was met with in a married woman who was said to have had an abortion at the end of three months. On the fifth day, when first seen she had a slight rigor, profuse sweating and foetid discharge. The temperature was 105 deg. F. pulse 120. On examination a small fragment of the placenta was found protruding through the os: the uterus was tender & enlarged. This fragment of placenta and some shreds of membrane were removed by the finger which the os admitted quite easily.. The uterine cavity was well washed out with a hot solution of perchloride of mercury 1 in 4000. Ten grains of Sulphate of Quinine were given in one dose followed by the Liquid Extract of Ergot in half dram doses every four hours. On the following morning the temperature was normal and the pulse 80. The patient made an uneventful recovery.

It occasionally happens that a Uterine Polyp simulates an imperfect abortion- but the absence of Amenorrhoea may help in forming a correct diagnosis.

IV.MISSED ABORTION. This is an unfortunate name, applied to those cases in which death of the ovum occurrs, but its expulsion from the uterus is delayed perhaps for weeks, & in rare cases it has been retained until the ninth month. The difficulty of making a correct diagnosis in missed abortions was well shown in the case of Kitson v Playfair, in which the plaintiff maintained that a blighted ovum had remained within the womb for sixteen months; the defendant regarding the substance removed to be a portion of fresh placenta left in utero after a recent incomplete abortion. At first there are the usual signs & symptoms of an early pregnancy, these gradually pass off, save the amenorrhoea which persists. The patient complains of a sensation of weight and coldness in the hypogastrium and the uterus is found to be enlarged and to have a doughy feeling. It is important to bear in mind that a dead foetus may remain within the uterus for many months, as the chastity of a woman, separated for a time from her husband may be doubted. When the foetus is finally expelled it is usually dry, of a dark brown colour and presents

a somewhat shrivelled appearance, and may be wrapped up in the placenta. In rare cases a process of calcareous degeneration is set up, and what is known as a Lithopoedion is formed. The Carneous, Sarcous, or Fleshy Mole is an occasional product of Abortion. It is produced by a haemorrhagic condition of the decidua. The embryo may be partially absorbed or completely disappear. Sometimes the amniotic cavity is completely obliterated by the haemorrhage. Organization of the effusion may occur, a fibrinous mass developing, which may be retained many months before being expelled from the uterus as a fleshy mole.

TREATMENT OF INTERRUPTED GESTATION.

1. Abortion. The treatment of abortion will depend upon whether the abortion is (1) Threatened, (2) Inevitable or (3) Imperfect. When abortion is threatened the treatment must be commenced by putting the patient at rest and keeping her as quiet as possible. Many patients are quite indifferent as to the result of treatment & would rather the miscarriage should occur than not. All excitement and worry must be avoided The bowels to be relieved by an enema of warm water to which a little olive oil may be added, if constipation be troublesome. In the majority of cases it is best not to interfere with the

bowels until the uterine contractions have settled. The diet must be limited in quantity at first, a little cool milk and soda may be allowed. A fruit diet has been found to be of great service in threatened abortion. Alcohol is to be prohibited, and the use of Tea or Coffee is to be restricted. The fluid extracts of Viburnum Prunifolium and Aleteris Farinosa have been found to be very useful. Complete rest in bed, continued until all pain and haemorrhage have been absent for some days is the most important factor in treatment.

II INEVITABLE ABORTION.

When it is not possible to arrest the progress of the abortion everything must be done to render it as complete as possible. "Empty the Uterus" "as soon as possible" is the maxim to be followed. The unaided contractions of the Uterus are often sufficient to completely expel its contents. The products of an abortion must be carefully examined so that no pieces of placenta or shreds of membrane are allowed to remain, and become foci for future trouble. When the os internum admits the examining finger easily, the uterus may be aided in its efforts to expel the ovum without much difficulty, for the examining finger can act as a very efficient curette. When the haemorrhage is severe, but the os does not admit the finger one of two methods of treatment may be adopted. A. Plugging the Vagina.

The vagina may be plugged with long strips of sterilized lint, soaked in glycerine and sprinkled with Iodoform. Before commencing the packing the bowels and bladder must be emptied. The packing should be firm and well pressed up into the fundus of the vagina. The aid of a duckbill speculum is recommended by many authorities, but no difficulty was ever encountered in tamponading without any such assistance. The packing should not be allowed to remain in situ longer than twelve hours, at the end of which time the uterus will usually have expelled the contents, which are then found lying on the last strip of lint removed. The process of packing may be repeated if it is thought necessary. When all the strips of lint have been removed a warm antiseptic vaginal douche should be given. This method was the one adopted in all the cases requiring active treatment and always with satisfactory results.

B. Mechanical Dilatation of the Os Uteri so that the contents may be either expelled more rapidly or their removal rendered more easy. The dilatation may be accomplished by means of Sponge, Tupelo, or Laminaria Tents, which are inserted into the Os and allowed to remain for some hours, where they swell up and cause dilatation.

The use of "tents" is condemned by many competent authorities and appears to be gradually dying out with the majority of medical practitioners. There are many forms of dilator on the market the most popular is Hegar's or some modification of it. A general anasthetic should be administered before commencing the operation, which must be done with the strictest antiseptic precautions. Great care must be exercised in using the dilators, so that dilatation is uniform and rupture of the cervix avoided.

III The Treatment of Imperfect Abortion.

When a case of imperfect abortion is seen early a careful examination of all the products of the abortion should be made, to gain an idea of what is remaining within the uterus. The uterine cavity should be carefully explored and if possible all shreds of membrane and particles of placenta removed. Dilatation may be necessary before this can be accomplished.

Abdominal pressure over the fundus of the uterus may greatly aid in exciting the uterus to contract and expel the residium. Drachm doses of the Liquid Extract of Ergot given three times a day will help in the processess of involution.

After any manipulation of the interior of the uterus an antiseptic douche is always to be given. If the imperfect abortion has persisted for some little time the patient must be put

to bed, given Ergot in appropriate doses and hot vaginal douches administered night and morning. If recovery is not attained by these means, the advisability of curetting the interior of the uterus must be considered.

IV. Missed Abortion. When the diagnosis of missed abortion has been established the os uteri must be dilated and the case treated as though it were an Inevitable Abortion. At all times it is necessary to impress upon the patient the necessity for exercising great care in the after treatment, for many cases of chronic ill health date from inefficient treatment of an abortion. There is just as much necessity for complete rest in bed for some time after an abortion as after a full time delivery.

PROPHYLAXIS. To prevent the recurrence of an abortion is not always easy, as the patient will often thwart all efforts made in this direction. The cause must be sought for and removed if possible. If there be any disease present prompt and effective treatment should be adopted. It is not advisable for conception to occur until the health of the mother has been completely restored.

When the abortion is due to paternal causes

attention must be turned in this direction & an appropriate line of treatment followed.

Treatment of premature Labour.

The treatment of premature labour is identical with that of a full time delivery.

-:-:- :-:-:-:-:-:-:-